# Groundwater response to the November 15, 2017 earthquake in Korea

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The objective of this study is to examine groundwater responses before and after the November 15, 2017 Pohang earthquake (Mw=5.4) in a coastal area of Korea. The earthquake caused devastating damages to many buildings in the city. For this study, groundwater monitoring data (water level, electrical conductivity, water temperature) were obtained for January 2016 to February 2018 from the national groundwater monitoring stations, the rural groundwater monitoring wells, and the seawater intrusion monitoring wells and they are located within 25 km from the epicenter. There are eight national groundwater monitoring stations (PSG, PYI-D, PYI-S, PGB-D, PGB-S, PJH, PDH, PGR), five rural groundwater monitoring wells (PH1, PH2, PH3, PH4, PH5) and four seawater intrusion monitoring wells (GG1, GG2, YI1, YI2). Six of the monitored wells showed groundwater level decreases of 9–81 cm and two of them exhibited a recovery to the previous level within three days while the remaining wells did not. And six monitoring wells showed EC changes to the earthquake with -1,274–161 $\mu$S/cm. In addition, three wells showed discernible groundwater temperature fluctuations of -0.2–0.3oC. Here, we found the magnitude of groundwater level change is decreasing with distance of the monitoring wells from the epicenter. Some detailed analyses on the relationship between the responses and a variety of hydrogeological parameters deserve a further study. This work was supported by the Energy Efficiency & Resources of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant funded by the Korea government Ministry of Trade, Industry and Energy (No. 20183010111860) and by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. NRF-2015R1A4A1041105).